CLAIMS

1. A method for modifying the characteristics of a protein, comprising the steps of:

attaching a lipid substituent to the protein by a covalent linkage of at least one lipoamine residue to a carbohydrate side chain to produce a lipidized protein; and

recovering the lipidized protein.

2. A method according to Claim 1, wherein the lipid substituent is a lipoamine.

3. A method according to Claim 2, wherein the step of attaching further comprises the steps of

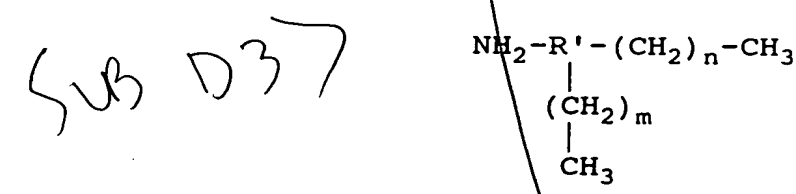
oxidizing a carbohydrate on a glycosylated polypeptide to produce an oxidized glycoprotein; and

reacting the oxidized glycoprotein with a lipoamine under suitable reaction conditions to form a lipidized protein.

4. A method according to Claim 2, wherein the lipoamine is a straight-chain lipoamine according to the formula:

where R is selected from the group consisting of: disubstituted alkyl (alkylene); 1,4-disubstituted cyclohexyl; disubstituted aryl (arylene); amido group of the formula $-(CHR_1)-CO-NH-$ wherein R_1 is hydrogen or an amino group; alkylcarbonyl; and phosphate diester; n is 1-50.

5. A method according to Claim 2, wherein the lipoamine is a branched-chain lipoamine according to the formula:



where R' is: a trisubstituted alkyl; a trisubstituted aryl; an amido group of the formula $-(CHR_1)-CO-N<$ wherein R_1 is

hydrogen or an amino group; an imino group of the formula -CHR_2-NH-CH< wherein R_2 is hydrogen or an amino group or an imino group of the formula -CH_2-N<; or a phosphate diester; m is 1-50; n is 1-50; and m and n are selected independently.

6. A method according to claim 5, wherein the branched-chain lipoamine is glycyldioctadecylamide.

7. A method according to Claim 1, wherein the protein is a naturally-occurring glycoprotein.

8. A method according to Claim 1, wherein the protein is encoded by an immunoglobulin superfamily gene.

9. A method for targeting an intracellular protein for binding with an antibody in a cell, comprising contacting the cell with a lipidized antibody which binds specifically with the intracellular protein.

10. A method according to Claim 9, wherein the lipidized antibody comprises at least one lipoamine residue linked to a carbohydrate side chain of an immunoglobulin.

11. A method according to Claim 14, wherein the lipoamine is glycyldioctadecylamide.

12. A method according to Claim 13, wherein the lipidized antibody is administered to a living mammalian cells <u>in vivo</u>.

13. A method according to Claim 12, wherein the lipidized antibody is taken up into the living cells to a greater extent than is a comparable antibody having the same amino acid sequence(s) and the same glycosylation pattern and lacking lipidization.

14. A composition for therapy or prophylaxis of a disease, comprising a therapeutically effective dosage of a lipidized protein.

15. A composition according to Claim 14, wherein the lipidized protein is an antibody.

16. A composition according to Claim 15, wherein the antibody binds to an intracellular protein.

17. A composition according to Claim 16, wherein the intracellular protein is a viral-encoded protein.

18. A composition according to Claim 17, wherein the viral-encoded protein is a Tat protein encoded by HIV-1.

19. A composition for prophylaxis, comprising a prophylactically effective dosage of a lipidized antibody wherein a lipid substituent is covalently linked to the antibody by a covalent linkage of at least one lipoamine residue to a carbohydrate side chain to produce a lipidized antibody.

20. A composition comprising a lipidized antibody linked to a diagnostic reporter, wherein a lipid substituent is covalently linked to the antibody by a covalent linkage of at least one lipoamine residue to a carbohydrate side chain to produce a lipidized antibody.

21. A composition of claim 20, wherein the antibody binds to an antigen intracellularly in living cells.

22. A composition of claim 22, wherein the antibody binds to the HIV-1 Tat protein intracellularly in HIV-infected human cells.

23. A method for diagnosing a pathological condition, comprising the steps of:

administering a lipidized antibody comprising a diagnostic reporter to a cell sample; and

detecting the presence of cells in which the diagnostic reporter is preferentially localized.